

In the claims:

1. (Currently Amended) A process for the catalytic selective oxidation of a sulfur compound contained in a hydrocarbonaceous feedstock to sulfur dioxide, wherein the process comprises: contacting a gaseous feed mixture of the hydrocarbonaceous feedstock, of which the sulfur compound is selected from the group consisting of hydrogen sulfide, mercaptans, disulfides, and heterocyclic sulfur compounds, and a molecular-oxygen containing gas with a catalyst at a temperature of at most 500 °C, wherein said catalyst consists essentially of a catalytically active group VIII noble metal selected from the group consisting of platinum, rhodium, iridium and combinations of two or more thereof at a concentration in the range of from 0.02 to 10% by weight, based on the total weight of the catalyst, supported on a catalyst carrier comprising zirconia that is stabilized or partially stabilized zirconia with yttria, wherein said feed mixture has an oxygen-to-carbon ratio of below 0.15.

2. (Original) The process of claim 1 wherein the oxygen-to-carbon ratio of the feed mixture is below 0.10.

Claims 3-8 (Canceled).

9. (Previously Presented) The process of claim 2 wherein the temperature is maintained in the range of from 200 to 500°C.

Claim 10 (Canceled).

11. (Original) The process of claim 1 wherein the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 10 bar (absolute).

12. (Original) The process of claim 11 wherein the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 5 bar (absolute).

13. (Original) The process of claim 1 wherein the feed mixture is contacted with the catalyst at ambient pressure.

14. (Original) The process of claim 1 wherein the hydrocarbonaceous feedstock is a gaseous hydrocarbonaceous feedstock.

15. (Original) The process of claim 14 wherein the hydrocarbonaceous feedstock is methane or natural gas.

16. (Original) The process of claim 14 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.

17. (Original) The process of claim 16 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.

18. (Original) The process of claim 15 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.

19. (Original) The process of claim 18 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.

20. (Original) The process of claim 1 wherein the feedstock is a liquid hydrocarbonaceous feedstock containing at most 1000 ppmw sulfur.

21. (Currently Amended) A process for the catalytic selective oxidation of hydrogen sulfide contained in a methane or natural gas feedstock to sulfur dioxide, wherein the process comprises: contacting a gaseous feed mixture of the methane or natural gas feedstock and a molecular-oxygen containing gas, wherein the gaseous feed mixture comprises ~~consists essentially of~~ up to 10% v/v hydrogen sulfide, with a catalyst at a temperature of at most 500 °C, wherein said catalyst comprises ~~consists essentially of~~ a catalytically active group VIII noble metal selected from the group consisting of platinum, rhodium, iridium and combinations of two or more thereof at a concentration in the range of from 0.02 to 10% by weight, based on the total weight of the catalyst, supported on a refractory oxide comprising zirconia that is stabilized or partially stabilized zirconia with yttria, wherein said feed mixture has an oxygen-to-carbon ratio of below 0.15.

Claims 22-23 (Canceled).

24. (Previously Presented) The process of claim 21 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.

25. (Currently Amended) A process for the desulfurization of a hydrocarbonaceous feedstock, wherein the process comprises:

contacting a gaseous feed mixture of the hydrocarbonaceous feedstock, which contains a sulfur compound selected from the group consisting of hydrogen sulfide, mercaptans, disulfides, and heterocyclic sulfur compounds, and a molecular-oxygen containing gas with a catalyst at a temperature of at most 500 °C, wherein said catalyst ~~comprises~~ consists essentially of a catalytically active group VIII noble metal selected from the group consisting of platinum, rhodium, iridium and combinations of two or more thereof at a concentration in the range of from 0.02 to 10% by weight, based on the total weight of the catalyst, supported on a refractory oxide catalyst carrier comprising zirconia that is partially stabilized or stabilized zirconia with yttria, wherein said gaseous feed mixture has an oxygen-to-carbon ratio of below 0.15, thereby selectively oxidizing the sulfur compounds in the hydrocarbonaceous feedstock to sulfur dioxide to provide a gaseous product containing the thus-formed sulfur dioxide; and removing the thus-formed sulfur dioxide from said gaseous product by either solvent extraction using an aqueous amine solution or an alkaline solution, or by adsorption on copper, barium or cerium oxide, or by reaction with lime.

26. (Previously Presented) The process of claim 25 wherein the oxygen-to-carbon ratio of the gaseous feed mixture is below 0.10.

Claims 27-29 (Canceled).

30. (Previously Presented) The process of claim 26 wherein the oxygen-to-carbon ratio of the gaseous feed mixture is below 0.10.

Claims 31-32 (Canceled).

33. (Original) The process of claim 25 wherein the temperature is maintained in the range of from 200 to 500 °C.

34. (Original) The process of claim 25 wherein the temperature is maintained in the range of from 200 to 300 °C.

35. (Previously Presented) The process of claim 25 wherein the gaseous feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 10 bar (absolute).

36. (Previously Presented) The process of claim 35 wherein the gaseous feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 5 bar (absolute).

37. (Previously Presented) The process of claim 25 wherein the gaseous feed mixture is contacted with the catalyst at ambient pressure.

38. (Original) The process of claim 25 wherein the hydrocarbonaceous feedstock is a gaseous hydrocarbonaceous feedstock.

39. (Original) The process of claim 38 wherein the hydrocarbonaceous feedstock is methane or natural gas.

40. (Original) The process of claim 38 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.

41. (Original) The process of claim 40 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.

42. (Original) The process of claim 39 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 10% v/v.

43. (Original) The process of claim 42 wherein the hydrocarbonaceous feedstock comprises hydrogen sulfide in a concentration of at most 5% v/v.

44. (Original) The process of claim 25 wherein the feedstock is a liquid hydrocarbonaceous feedstock containing at most 1000 ppmw sulfur.

45. (New) A process as recited in claim 1, wherein said catalyst further consists essentially of zirconium and cerium.

46. (New) A process as recited in claim 45, wherein said catalyst carrier further comprises a non-refractory oxide bulk material.

47. (New) A process as recited in claim 46, wherein the temperature is maintained in the range of from 200 to 500 °C; the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 5 bar (absolute).

48. (New) A process as recited in claim 21, wherein said catalyst further consists essentially of zirconium and cerium.

49. (New) A process as recited in claim 48, wherein said catalyst carrier further comprises a non-refractory oxide bulk material.

50. (New) A process as recited in claim 49, wherein the temperature is maintained in the range of from 200 to 500 °C; the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 5 bar (absolute).

51. (New) A process as recited in claim 25, wherein said catalyst further consists essentially of zirconium and cerium.

52. (New) A process as recited in claim 51, wherein said catalyst carrier further comprises a non-refractory oxide bulk material.

53. (New) A process as recited in claim 52, wherein the temperature is maintained in the range of from 200 to 500 °C; the feed mixture is contacted with the catalyst at a pressure in the range of from 1 to 5 bar (absolute).

54. (New) A catalyst composition useful in the selective oxidation of a sulfur compound contained in a hydrocarbonaceous feedstock, wherein said catalyst composition comprises: a particle comprising zirconia that is stabilized or partially stabilized with yttria, wherein said particle having incorporated therein cerium and rhodium.

55. (New) A catalyst composition as recited in claim 54, wherein the rhodium is present in said catalyst composition at a concentration in the range of from 0.02 to 10 % by weight, based on the total weight of said catalyst composition.

56. (New) A catalyst composition as recited in claim 55, wherein said particle further has incorporated therein iridium in an amount such that said catalyst composition has a concentration of said iridium in the range of from 0.02 to 10 % by weight, based on the total weight of said catalyst composition.

57. (New) A catalyst composition as recited in claim 56, wherein said particle has been coated with zirconia paint before the incorporation therein of the cerium, or rhodium, or iridium, or any combination thereof.

58. (New) A catalyst composition as recited in claim 57, wherein said catalyst composition has been dried or calcined, or both.

59. (New) A catalyst composition as recited in claim 58, wherein said particle further comprises a non-refractory oxide bulk material.

60. (New) A catalyst composition useful in the selective oxidation of a sulfur compound contained in a hydrocarbonaceous feedstock, wherein said catalyst composition consists essentially of: a particle comprising zirconia that is stabilized or partially stabilized with yttria, and metal selected from the group consisting of rhodium, iridium, cerium and combinations thereof.

61. (New) A catalyst composition as recited in claim 60, wherein said catalyst composition further consists essentially of rhodium present in said catalyst composition at a concentration in the range of from 0.02 to 10 % by weight, based on the total weight of said catalyst composition.

62. (New) A catalyst composition as recited in claim 61, wherein said catalyst composition further consists essentially of iridium present in said catalyst composition at a concentration in the range of from 0.02 to 10 % by weight, based on the total weight of said catalyst composition.

63. (New) A catalyst composition as recited in claim 62, wherein said catalyst composition further consists essentially of cerium.

64. (New) A catalyst composition as recited in claim 63, wherein said catalyst composition has been dried or calcined, or both.